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Nov 30

New Detailed Data For US Nuclear Forces Counted Under New START Treaty

arms control, Hans Kristensen, Nuclear Weapons, United States

[2 Comments »](#)

Air Force personnel perform New START Treaty inspection training on a Minuteman III ICBM payload section at Minot AFB in 2011. Nearly two years into the treaty, there have been few reductions of U.S. deployed strategic nuclear forces.

By Hans M. Kristensen

The U.S. State Department today released the full (unclassified) and detailed aggregate data categories for U.S. strategic nuclear forces as counted under the New START treaty. This is the forth batch of data published since the treaty entered into force in February 2011.

Although the new data shows a reduction compared with previous releases, a closer reading of the documents indicates that changes are due to adjustments of delivery vehicles in overhaul at any given time and elimination on so-called phantom platforms, that is aircraft that carry equipment that make them accountable under the treaty even though they are no longer assigned a nuclear mission. Actual reduction of deployed nuclear delivery vehicles has yet to occur.

The joint U.S.-Russian aggregate data and the full U.S. categories of data are released at different times and not all information is made readily available on the Internet. Therefore, a full compilation of the September data is made available here. [Continue reading »](#)

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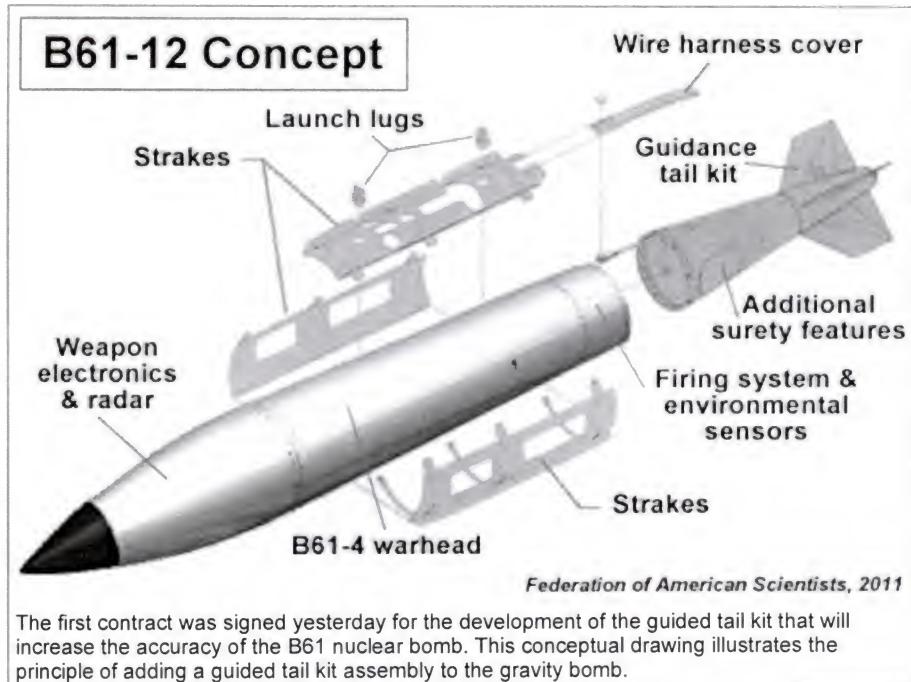
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Nov 28

B61-12: Contract Signed for Improving Precision of Nuclear Bomb

Hans Kristensen, NATO, Nuclear Weapons, United States

[1 Comment »](#)



By Hans M. Kristensen

The U.S. Air Force's new precision-guided nuclear bomb B61-12 moved one step closer to reality yesterday with the Pentagon issuing a \$178.6 million contract to Boeing. The contract covers Phase 1 (Engineering and Manufacturing Development) to be completed in October 2015. The contract also includes options for a Phase 2 and production.

In a statement on the contract, Boeing said that the tail kit program "further expands Boeing's Direct Attack weapons portfolio" and that the precision-guided B61-12 would "effectively upgrade a vital deterrent capability."

The expensive B61-12 project will use the 50-kiloton warhead from the B61-4 gravity bomb but add the tail kit to increase the accuracy and boost the target kill capability to one similar to the 360-kiloton strategic B61-7 bomb.

Because the B61-4 warhead also has selective lower-yield options, the tail kit will also allow war planners to select lower yields to strike targets that today require higher yields, thereby reducing radioactive fallout of an attack. The Air Force tried in 1994 to get a precision-guided low-yield nuclear bomb (PLYWD), but Congress rejected it because of concern that it would lead to more useable nuclear weapons. Now the Air Force gets a precision-guided nuclear bomb anyway.

The U.S. Air Force plans to deploy some of the B61-12s in Europe late in the decade for delivery by F-15E, F-16, F-35 and Tornado aircraft to replace the B61-4s currently deployed in Europe. The improved accuracy will increase the capability of NATO's nuclear posture, which will be further enhanced by delivery of the B61-12 on the stealthy F-35 Joint Strike Fighter.

Increasing the capability of NATO's nuclear posture contradicts the Deterrence and Defense Posture Review (DDPR) adopted in May 2012, which concluded that "the Alliance's nuclear force posture currently meets the criteria for an effective deterrence and defense posture." Moreover, improving NATO's nuclear capabilities undercuts efforts to persuade Russia to decrease its non-strategic nuclear forces.

Instead of *improving* nuclear capabilities and wasting scarce resources, the Obama administration must re-take the initiative to *reduce* the role of nuclear weapons and work with NATO to withdraw the nuclear weapons from Europe.

See also: Modernizing NATO's Nuclear Forces: Implications for the Alliance's Defense Posture and Arms Control

And: Previous blogs about NATO and nuclear weapons

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Nov 26

Nuclear Modernization Talk at BASIC Panel

arms control, Hans Kristensen, Nuclear Weapons, United States

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Linton Brooks and I discussed nuclear modernization at a November 13 panel organized by BASIC.

By **Hans M. Kristensen**

BASIC invited me to discuss nuclear weapons modernization with Linton Brooks at a Strategic Dialogue panel held at the Capitol Hill Club on November 13, 2012. We're still waiting for the official transcript, but BASIC has a rough recording and my prepared remarks are available [here](#). [Update: all material, including transcript with questions/answers, is available from BASIC].

In my talk, I argued that the Obama administration's nuclear arms control profile is at risk of being overshadowed by extensive nuclear weapons modernization plans, and that the approach must be adjusted to ensure that efforts to reduce the numbers and role of nuclear weapons and put an end to Cold War thinking are clearly visible as being the priority of U.S. nuclear policy.

The administration has nearly completed a strategic review of nuclear targeting and alert requirements to identify additional reductions of nuclear forces. Release of the findings was delayed by the election, but the administration now needs to use the review to reinvigorate the nuclear arms reduction agenda that has slowed with the slow implementation of the modest New START Treaty and the disappointing "nuclear status quo" decision of the NATO Chicago Summit.

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Nov 13

Germany and B61 Nuclear Bomb Modernization

Hans Kristensen, NATO, Nuclear Weapons, United States

[1 Comment »](#)



During a recent visit to Germany I did an interview with the Mitteldeutscher Rundfunk magazine FAKT on the status of the B61 nuclear bomb modernization.

By Hans M. Kristensen

Last week, I was in Berlin to testify before the Disarmament Subcommittee of the German Parliament's Foreign Affairs Committee on the future of the U.S. B61 nuclear bombs in Europe (see my [prepared remarks and fact sheet](#)).

One of the B61 bombs currently deployed in Europe is scheduled for an upgrade to extend its life and add new military capabilities and use-control features. The work has hardly begun but the project is already behind schedule and the cost has increased by more than 150 percent in two years, from \$4 billion to \$10.4 billion. The subcommittee wanted to know if the program is in trouble. I said I believe it certainly is.

The German television magazine FAKT did an interview (article; video) with me and it came as somewhat of a surprise to them that the B61 life-extension will not install a fire-resistant pit to improve the safety of the weapon. They also tried to get German Foreign Minister Guido Westerwelle on the program. The policy of the German government coalition is to try to have nuclear weapons removed from Germany and Westerwelle has publicly promoted this position clearly in the past. This time he did not want to talk, however, as journalists and camera-teams chased him down the hallway. He may have gotten shell-shocked by the pushback from the old nuclear guard in NATO.



German Foreign Minister Guido Westerwelle did not want to talk with MDR FAKT about withdrawal of US nuclear weapons.

Although NATO recently determined that the current nuclear posture in Europe meets the Alliance's deterrence and defense needs, NATO has decided – with German backing – to introduce a new precision-guided nuclear bomb in Europe with increased military capabilities at the end of the this decade for delivery by a new stealthy aircraft.

During my briefing to the foreign affairs committee I urged Germany to continue to push for a withdrawal. Otherwise it will have to explain to the German public why it has decided instead to support deployment of precision-guided nuclear bombs on stealth-delivered aircraft in Europe. The two positions will be hard to square.

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Oct 20

Cuban Missile Crisis: Nuclear Order of Battle

Hans Kristensen, Nuclear Weapons, Robert S. Norris, Russia, United States

[4 Comments »](#)



At the time of the Cuban Missile Crisis blockade, unknown to the United States, the Soviet Union already had short-range nuclear weapons on the island, such as this FKR-1 cruise missile, that would most likely have been used against a U.S. invasion.

By Hans M. Kristensen and Robert S. Norris

Fifty years ago the world held its breath for a few weeks as the United States and the Soviet Union teetered on the brink of nuclear war in response to the Soviet deployment of medium-range nuclear missiles in Cuba.

The United States imposed a military blockade around Cuba to keep more Soviet weapons out and prepared to invade the island if necessary. As nuclear-armed warships sparred to enforce and challenge the blockade, a few good men made momentous efforts and decisions that prevented use of nuclear weapons and eventually defused the crisis.

What the Kennedy administration did not know, however, was that the Soviet Union had 158 nuclear warheads of five types already in Cuba by the time of the blockade. This included nearly 100 warheads for short-range ballistic missiles and cruise missiles. If the invasion had been launched, as the military recommended but the White House fortunately decided against, it would most likely have triggered Soviet use of those short-range nuclear weapons against the U.S. Naval Base at Guantanamo and at amphibious forces storming the Cuban beaches. That, in turn, would have triggered wider use of nuclear forces.

In our latest Nuclear Notebook - The Cuban Missile Crisis: a nuclear order of battle, October and November 1962 – we outline the nuclear order of battle that the United States and the Soviet Union had at their disposal. At the peak of the crisis, the United States had some 3,500 nuclear weapons ready to use on command, while the Soviet Union had perhaps 300-500.

The Cuban Missile Crisis order of battle of useable weapons represented only a small portion of the total inventories of nuclear warheads the United States and Russia possessed at the time. Illustrating its enormous numerical nuclear superiority, the U.S. nuclear stockpile in 1962 included more than 25,500 warheads (mostly for battlefield weapons). The Soviet Union had about 3,350.

For all the lessons the Cuban Missile Crisis taught the world about nuclear dangers, it also left some enduring legacies and challenges that are still confronting the world today. Among other things, the crisis fueled a build-up of quick-reaction nuclear weapons that could more effectively hold a risk the other side's nuclear forces in a wider range of different strike scenarios.

Today, 50 years later and more than 20 years after the Cold War ended, the United States and Russia still have more than 10,000 nuclear weapons combined. Of those, an estimated 1,800 nuclear warheads are on alert on top of long-range ballistic missiles, ready to be launched on short notice to inflict unimaginable devastation on each other. The best way to honor the Cuban Missile Crisis would be to finally end that legacy and take nuclear weapons off alert.

Nuclear Notebook: The Cuban Missile Crisis: A nuclear order of battle, October and November 1962

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Oct 12

NATO: Nuclear Transparency Begins At Home

Hans Kristensen, NATO, Russia, United States

[No Comments »](#)

Meetings of NATO Defence Ministers

NATO Headquarters, Brussels, Belgium
09 Oct. 2012 – 10 Oct. 2012

Monday 8 October 2012

14:00	Opening remarks by Deputy Spokesperson Carmen Romero at the pre-ministerial press briefing	EN
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Tuesday 9 October 2012

11:35	Doorstep statement by the NATO Secretary General	EN	MP3 3675Kb	natochannel.tv
12:30	Bilateral meeting between the NATO Secretary General and the Minister of Defence of Greece			
13:00	Bilateral Meeting between the NATO Secretary General and the US Secretary of Defense			
13:30	North Atlantic Council meeting in Defence Ministers session	EN	MP3 1633Kb	natochannel.tv
16:05	Official Portrait			
16:30	Meeting of the Nuclear Planning Group	no media opportunity		
17:35	Press conference by the NATO Secretary General	EN/MP3 7600Kb		natochannel.tv
	• Opening remarks by the NATO Secretary General	EN	FR/MP3 7580Kb	
	• Questions and answers			
19:00	Working Dinner of the North Atlantic Council			

What's wrong with this picture? Despite NATO's call for greater nuclear transparency, old-fashioned nuclear secrecy prevents media access to the Nuclear Planning Group.

By Hans M. Kristensen

Less than six months after NATO's Deterrence and Defense Posture Review (DDPR) adopted at the Chicago Summit called for greater transparency of non-strategic nuclear force postures in Europe, the agenda for the NATO defense minister get-together in Brussels this week listed the Nuclear Planning Group (NPG) meeting with the usual constraint: "no media opportunity."

Why should the news media not have access to the NPG meeting just like they have access to other meetings discussing NATO security issues? After all, the high stakes that justified nuclear secrecy in the past disappeared

with the demise of the Soviet Union, no urgent military mission is (publicly) attributed to the remaining nearly 200 U.S. nuclear bombs left in Europe, and NATO now officially advocates greater nuclear transparency.

Whatever the reason, the “no media opportunity” is symbolic of the old-fashioned secrecy that continues to constrain NATO nuclear policy discussions. The nuclear planners are insulated deep within the alliance with little or no public scrutiny. Even for NATO officials, tradition, past political statements, and turf can make it difficult to ascertain and question the rationales behind the nuclear posture.

The DDPR determined “that the Alliance’s nuclear force posture currently meets the criteria for an effective deterrence and defense posture.” The reasons for that conclusion remain elusive and the news media should have access to the NPG meeting to ask the questions. Not least because the conclusion is now resulting in significant modernization of NATO’s nuclear forces at considerable cost to the Alliance and some of its member countries. Another potential cost is how it will affect relations with Russia.

If NATO wants to increase nuclear transparency, it should and could break with old-fashioned nuclear secrecy and disclose the broad outlines of its non-strategic nuclear deployment in Europe. It is already widely known and NATO’s nuclear members are already transparent about the broad outlines of their *strategic* nuclear forces – those that *unlike* the non-strategic weapons in Europe are actually tasked to provide the ultimate security guarantee to the Allies.

Rather than limiting nuclear transparency efforts to prolonged negotiations for what’s likely to be small incremental steps that essentially surrender the agenda to hardliners in Moscow, unilateral disclosure of NATO’s non-strategic posture would jump-start the process, put pressure on Russia to follow suit, and be consistent with the already considerable transparency of NATO’s strategic forces.

See also: Non-Strategic Nuclear Weapons, FAS, May 2012.

This publication was made possible by a grant from the Carnegie Corporation of New York and Ploughshares Fund. The statements made and views expressed are solely the responsibility of the author.

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written by **Hans M. Kristensen**

Oct 10

DOD: Strategic Stability Not Threatened Even by Greater Russian Nuclear Forces

arms control, Hans Kristensen, Nuclear Weapons, Russia, United States

[2 Comments »](#)



Russia's nuclear forces, even if carrying out a surprise disarming first strike against the United States with significantly more warheads than allowed under the New START Treaty limit, would have "little to no effects" on the US the ability to retaliate with a significant second strike, according to the Department of Defense.

By Hans M. Kristensen

A Department of Defense (DOD) report on Russian nuclear forces, conducted in coordination with the Director of National Intelligence and sent to Congress in May 2012, concludes that even the most worst-case scenario of a Russian surprise disarming first strike against the United States would have "little to no effect" on the U.S. ability to retaliate with a devastating strike against Russia.

I know, even thinking about scenarios such as this sounds like an echo from the Cold War, but the Obama administration has actually come under attack from some for considering further reductions of U.S. nuclear forces when Russia and others are modernizing their forces. The point would be, presumably, that reducing while others are modernizing would somehow give them an advantage over the United States.

But the DOD report concludes that Russia "would not be able to achieve a militarily significant advantage by any plausible expansion of its strategic nuclear forces, even in a cheating or breakout scenario under the New START Treaty" (emphasis added).

The conclusions are important because the report come after Vladimir Putin earlier this year announced plans to produce "over 400" new nuclear missiles during the next decade. Putin's plan follows the Obama administration's plan to spend more than \$200 billion over the next decade to modernize U.S. strategic forces and weapons factories.

The conclusions may also hint at some of the findings of the Obama administration's ongoing (but delayed and secret) review of U.S. nuclear targeting policy. Continue reading »

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Oct 03

New START Data Released: Nuclear Flatlining

arms control, Hans Kristensen, Russia, United States

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By Hans M. Kristensen

More than a year and a half after the New START Treaty between the United States and Russia entered into force on January 5, 2011, one thing is clear: they are not in a hurry to reduce their nuclear forces. [Continue reading »](#)

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written by **Hans M. Kristensen**

Sep 29

India's SSBN Shows Itself

Hans Kristensen, India, Nuclear Weapons

[2 Comments »](#)



A new satellite image appears to show part of India's new SSBN partly concealed at the Visakhapatnam naval base on the Indian east coast (17°42'38.06"N, 83°16'4.90"E).

By Hans M. Kristensen

Could it be? It is not entirely clear, but a new satellite image might be showing part of India's first nuclear-powered ballistic missile submarine, the Arihant.

The image, taken by GeoEye's satellite on March 18, 2012, and made available on Google Earth, shows what appears to be the conning tower (or sail) of a submarine in a gap of covers intended to conceal it deep inside the Visakhapatnam (Vizag) Naval Base on the Indian east coast. [Continue reading »](#)

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written by **Hans M. Kristensen**

Sep 23

In Warming US–NZ Relations, Outdated Nuclear Policy Remains Unnecessary Irritant

Hans Kristensen, Nuclear Weapons, United States

[7 Comments »](#)



U.S. Defense Secretary Leon Panetta meets with New Zealand Defense Minister Jonathan Coleman, in a first step to normalize relations between the two countries nearly 30 years after the U.S. punished New Zealand for its ban on nuclear weapons.

By Hans M. Kristensen

Hat tip to the Obama administration for doing the right and honorable thing: breaking with outdated Reagan administration policy and sending Defense Secretary Leon Panetta to New Zealand and ease restrictions on New Zealand naval visits to U.S. military bases.

The move shows that Washington after nearly 30 years of punishing the small South Pacific nation for its ban against nuclear weapons may finally have come to its senses and decided to end the vendetta in the interest of more important issues.

The New Zealand defense minister made it quite clear that the move does not mean a change to New Zealand's policy of denying nuclear warships access to its harbors. "New Zealand has made it very clear that the policy remains unchanged and will remain unchanged."

Whether (or how soon) the move will result in a resumption of U.S. naval visits to New Zealand remains to be seen. The U.S. Navy still has two policies that would appear to prevent this. One is a "one-fleet" policy that holds that if any U.S. ships are restricted from an area, it will refrain from sending any ships there. The other is the Neither Confirm Nor Deny Policy (NCND), which prohibits disclosing if a warship carries nuclear weapons or not, a leftover from the Cold War when stuff like that was important.

These policies leave an irritant in place that doesn't need to be there. It seems that both countries can make modifications to their policies to allow normal military relations to resume. [Continue reading »](#)

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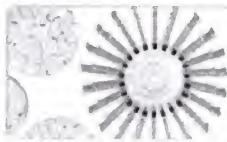
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US nuclear forces, 2012

Hans M. Kristensen

Robert S. Norris

Abstract

As of early 2012, the United States maintained an estimated 2,150 operational warheads. The arsenal is composed of roughly 1,950 strategic warheads deployed on 798 strategic delivery vehicles, as well as nearly 200 nonstrategic warheads deployed in Europe. In addition, the United States maintains approximately 2,800 warheads in reserve, bringing the total stockpile to nearly 5,000 warheads. In this article, the authors take a hard look at the US nuclear arsenal, and explore the next steps in the nation's nuclear strategy.

[ICBM](#) [intercontinental ballistic missiles](#) [New START](#) [nonstrategic weapons](#)

[nuclear powered ballistic submarines](#) [SSBN](#) [strategic bombers](#)

[Strategic Deterrence and Global Strike](#)

Though the size of the US nuclear stockpile has changed little over the past year, the arsenal continues to evolve under influences that include President Barack Obama's vision of nuclear disarmament and US obligations under the New Strategic Arms Reduction Treaty (New START). Since the Pentagon's unprecedented May 2010 declaration that the nuclear stockpile consisted of 5,113 warheads (as of September 2009), official comments seem to confirm that the level has not changed much: In March 2011, the US national security adviser said the stockpile included "approximately 5,000 warheads" (Donilon, 2011), and in November 2011, the principal deputy undersecretary of defense for policy said the level has "dropped slightly" from 5,113 (Parrish, 2011). The administration has unfortunately revealed neither how many warheads have been dismantled since September 2009 nor how many retired warheads await dismantlement.

Despite this, the administration made a positive stride in the direction of nuclear transparency in December 2011, when it released its full unclassified aggregate data under New START.¹ The data include a breakdown of the numbers of US weapon delivery systems but not a breakdown of the warhead distribution. Perhaps the data release—which reversed the administration's unfortunate June 2011 policy of disclosing only very basic New START data—was influenced by our appeal for improved transparency.²

As of early 2012, the United States maintained an estimated 2,150 operational warheads. The arsenal is composed of roughly 1,950 strategic warheads deployed on 798 strategic delivery vehicles, as well as nearly 200 nonstrategic warheads deployed in Europe. In addition, the United States maintains approximately 2,800 warheads in reserve, bringing the total stockpile to nearly 5,000 warheads (see Table 1). (As many as 3,000 additional warheads have been retired from the military stockpile and await dismantlement.)

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Table 1.

The US nuclear arsenal, 2012

Implementing New START

Though inspections under New START are well under way, reductions to deployed US nuclear forces have yet to begin. To comply with treaty terms, the Obama administration has decided that the United States will reduce, before February 2018, the number of its deployed strategic delivery vehicles to a maximum of 240 submarine-launched ballistic missiles (SLBMs), 420 intercontinental ballistic missiles (ICBMs), and 60 nuclear-capable heavy bombers (Senate Committee on Foreign Relations, 2010: 46). This constitutes a reduction, from current levels, of 48 SLBMs, 30 ICBMs, and 34 B-52Hs. The Defense Department's budget request for fiscal 2013 does not specify how it will cut these nuclear forces; instead, the plan will be spelled out in the Nuclear Posture Review Implementer, a document that lists which of the review's decisions will be implemented and when.

Reductions so far have focused on removing equipment from B-1B and B-52G bombers. No longer part of the nuclear strike force, the aircraft were counted under the treaty because they carried equipment once used for nuclear missions, removing the equipment thus denuclearizes the bombers. The last B-1B was denuclearized in early 2011 and—after an exhibition demonstration in March 2011—declared “no longer capable of employing nuclear armaments” under New START (State Department, 2012; US Air Force Public Affairs, 2011). The B-52G was withdrawn from nuclear missions in the early 1990s, but New START aggregate data listed 39 of the aircraft as nuclear-capable as of September 2011. By March 2012, six of those had undergone an elimination process in which the tail section is separated, leaving 33 still to be denuclearized under the treaty (US Air Force Global Strike Command Public Affairs, 2012).³

Nuclear war plan guidance

Coinciding with implementation of New START, the Obama administration is revising presidential guidance on how the military is supposed to make its plans for potential nuclear weapons use—in effect, creating a new nuclear war plan. Such guidance is necessary to enable deeper reductions to US nuclear forces.

Regarding the new guidance, National Security Advisor Thomas Donilon said in March 2011 that the president had asked the Defense Department “to review our requirements and develop options for further reductions in our current nuclear stockpile,” including “changes in targeting requirements and alert postures that are required for effective deterrence” (Donilon, 2011: 5). Gen. Robert Kehler, head of US Strategic Command (STRATCOM), echoed the administration’s intention to “review and revise the nation’s nuclear strategy and guidance on the roles and missions of nuclear weapons” (Kehler, 2011: 121). The Pentagon will present President Obama with a series of options; he will then decide which to follow (as of March 2012, he had not reviewed any options). After he chooses, the next crucial step will be the writing of a presidential policy directive, which will in turn form the basis of a Nuclear Weapons Employment Policy prepared by the defense secretary and a nuclear supplement to the Joint Strategic Capabilities Plan prepared by the chairman of the Joint Chiefs of Staff. These two documents will then guide STRATCOM’s revision of the strategic nuclear war plan, now known as Strategic Deterrence and Global Strike (or OPLAN 8010).⁴ The changes could take several years to implement.

In January 2012, the Pentagon published a new defense strategy that anticipated further nuclear reductions: *“It is possible that our deterrence goals can be achieved with a smaller nuclear force, which would reduce the number of nuclear weapons in our inventory as well as their role in U.S. national security strategy”* (Defense Department, 2012a: 5, emphasis in the original).

Nuclear warhead production and modernization

In response to the federal government’s financial difficulties, the Obama administration’s 2013 defense budget adjusts some nuclear warhead production and modernization programs (Defense Department, 2012b).

The most noteworthy change is a decision to defer, for at least five years, construction of the expensive Chemistry and Metallurgy Research Replacement-Nuclear Facility at Los Alamos. Faced with ever-increasing cost estimates—currently nearing \$6 billion—the plan to increase annual production of plutonium pits at Los Alamos from 20 to 80 is being reassessed. However, plans for a new Uranium Processing Facility at Oak

5 years

2 nuclear

Ridge, Tennessee—projected to cost up to \$6.5 billion—continue to move forward. Another new measure, the decision to slow the production rate of the W76-1 warhead, is intended to free up funds so that the new B61-12 bomb can be produced.

The administration's requested fiscal 2013 budget for the National Nuclear Security Administration (NNSA) is \$11.5 billion—a relatively small increase above the enacted level of \$11 billion for 2012. The weapons activities account within the NNSA requested budget is \$7.6 billion for 2013—just a 5 percent increase from 2012 enacted levels. NNSA originally wanted a 10 percent increase for 2013, and more than \$92 billion over the next decade, for maintaining and modernizing nuclear warheads and production facilities (NNSA and Defense Department, 2010: 1–2, 9). Although it is required by Congress, the 2013 budget request does not specify so-called out-year costs for 2014–17—an indication of the considerable uncertainty surrounding the funding environment. Budgets for future years will likely be included in the Energy Department's revised Stockpile Stewardship and Management Plan for 2013.⁵

Land-based ballistic missiles

The US Air Force operates a force of 450 silo-based Minuteman III ICBMs split evenly across three wings: the 90th Missile Wing at F.E. Warren Air Force Base (AFB) in Wyoming; the 91st Missile Wing at Minot AFB in North Dakota; and the 341st Wing at Malmstrom AFB in Montana. Each wing has three squadrons, each with 50 missiles controlled by five Launch Control Centers.

The United States will have to reduce its ICBM force, as required under New START, by at least 30 missiles, for a total of 420. The final number, however, has not yet been announced; it will depend on how many bombers the air force retains. A reduction to 400 missiles could be achieved by cutting one squadron from one of the three bases. A reduction to 300 missiles could be achieved by cutting one squadron from each of the three bases.

X The missiles carry either the 335-kiloton W78 warhead or the 300-kiloton W87 warhead. Most of the ICBMs carry a single warhead, although a few still carry multiple W78s. The 2010 Nuclear Posture Review (NPR) stated that all missiles would be downloaded to a single warhead (Defense Department, 2010), but we believe an upload capability will be retained.

The air force is carrying out a multibillion dollar, decade-long modernization program to extend the service life of the Minuteman III to 2030; one component of the project is the Propulsion Replacement Program. New solid-fuel stage motors and refurbished flight controls were installed across the entire force to extend booster service life; the final motor was installed in April 2011.

The fiscal budget for 2013 includes \$9.4 million to study a replacement for the Minuteman III missiles; one possible replacement is a mobile ICBM that would increase survivability and reduce the requirement to keep missiles on high alert.

Two ICBM flight-tests were conducted in 2011—the same number as in 2010. A Minuteman III from Minot AFB was test-launched on June 22 from Vandenberg AFB in California. The single W78 unarmed reentry vehicle successfully flew more than 6,700 kilometers (4,160 miles) to an impact point near Kwajalein in the Pacific Ocean. This was the first flight-test that used a new command destruct system—Command Receiver Decoder—developed for the Minuteman program. The second flight-test took place on September 27, when a Minuteman III was launched from Vandenberg AFB to determine the weapon system's reliability and accuracy. The missile malfunctioned in flight and was destroyed. "When terminated," according to the air force, "the vehicle was in the broad ocean area, northeast of Roi-Namur," located on the northern tip of the Kwajalein atoll (US Air Force, 2011).

Nuclear-powered ballistic missile submarines (SSBNs)

All of the US Navy's 14 Ohio-class SSBNs (eight based in the Pacific and six in the Atlantic) carry Trident II D5 SLBMs. Normally 12 of the SSBNs are considered operational, although the New START data released in December 2011 revealed that, as of September 30, 2011, only 10 SSBNs were carrying a full complement of missiles—24 SLBMs per SSBN (Kristensen, 2011c). If all 12 operational SSBNs carry 24 SLBMs (288 D5 missiles total), and if each missile carries an average of four warheads, then approximately 1,152 warheads are deployed. Two warhead types are deployed on the D5s: the 100-kiloton W76/W76-1 and the 455-kiloton W88.

Each SSBN conducts an average of three deterrent patrols per year, an operational tempo similar to that during the Cold War; to sustain the pace, each boat has two

crews. During 2011, the SSBN force conducted 32 deterrent patrols, with more than 60 percent of them in the Pacific Ocean, reflecting nuclear war plans that include targets in China, North Korea, and eastern Russia.

At any given time, nine or ten of the SSBNs are at sea. Five of them are on "hard alert," which means they are in designated patrol areas within range of the targets specified in their assigned target package in accordance with the strategic war plan. The other four or five SSBNs at sea are in transit to or from their patrol areas, and the remaining boats are in port, likely in dry dock with their missiles removed.

The 2010 NPR stated that the United States would deploy no more than 240 SLBMs at any given time. To help meet that goal, over the next five years four launch tubes on each SSBN will be rendered inoperative so that each deployed submarine will carry 20 SLBMs instead of 24.

The navy has ambitious plans to replace 12 Ohio-class SSBNs with new submarines—currently designated SSBN(X)—at a cost of at least \$80 billion. Each boat will carry fewer missiles than the current Ohio-class SSBN, perhaps as few as 16. To save money in the short term, the Obama administration has decided to delay construction of the first boat by two years to 2021, with a launch goal of 2028 and an enter-into-service date of 2031. The first Ohio-class SSBN is set to retire in 2027, with the others to follow at a rate of one per year. Unless the Ohio-class SSBN service life is extended (by slowing the burn-up of reactor fuel rods via fewer deterrent patrols, for example), the SSBN fleet will shrink to 10 boats by 2030 before increasing to 12 when the SSBN(X) boats eventually enter service.

Beginning in 2015, the navy will begin deploying the D5LE SLBM, a life-extended version of the D5, on its SSBNs; the new missile will also arm the new SSBN(X). The navy plans to procure 12 D5LE missiles in 2012 and to continue purchasing them until it has a total of 108 D5LE SLBMs—at a cost of more than \$4 billion.

Strategic bombers

The air force operates 20 B-2 and 93 B-52H bombers, of which 18 and 76, respectively, are nuclear capable. Of these, only 16 B-2s and 44 B-52s are thought to be fully nuclear certified and assigned nuclear weapons.

The nuclear bombers are organized across three bases, each with one wing and two squadrons. The 69th Bomb Squadron is the newest, added in 2009 after the notorious August 2007 incident in which six nuclear-armed advanced cruise missiles were flown from Minot AFB in North Dakota to Barksdale AFB in Louisiana without authorization. The 69th Bomb Squadron achieved full operational capability in June 2011.

Approximately 300 nuclear weapons for bombers are stored at Minot AFB and Whiteman AFB in Missouri, including B61-7, B61-11 (for B-2s only), and B83-1 gravity bombs, as well as W80-1 warheads carried on air-launched cruise missiles (ALCMs, for B-52Hs only). Central storage facilities at Kirtland AFB in New Mexico and Nellis AFB in Nevada hold hundreds of additional bombs and cruise missiles that could be returned to the bases if necessary. Plans to reestablish nuclear weapon storage at Barksdale AFB have apparently been abandoned ([Airforce-Magazine.com, 2011; Ferrell, 2012](#)).

The air force is designing a new long-range bomber that will eventually replace the B-2 and the B-52H; the fiscal 2013 budget request includes \$300 million for the project, with \$6.3 billion projected through 2017. The long-term plan envisions building 80–100 bombers at a price tag of between \$38 billion and \$55 billion. The ALCM, which is limited to use by the B-52H and slated for a 2030 retirement, will be replaced by the advanced long-range standoff nuclear cruise missile. The 2013 budget includes \$610 million for the new missile through 2017, with the goal of initial production starting around 2025.

Nonstrategic nuclear weapons

We estimate that the US stockpile includes approximately 760 nonstrategic nuclear weapons ([Norris and Kristensen, 2011](#)). This includes: nearly 200 active nonstrategic B61 bombs deployed in Europe, 300 inactive B61s in storage in the United States; and 260 W80-0 warheads for the navy's nuclear Tomahawks, which are in the process of being retired.

The B61 bombs in Europe are deployed at six air bases in five NATO countries: Belgium, Germany, Italy, the Netherlands, and Turkey. The Belgian, Dutch, and Turkish air forces (with F-16s) and German and Italian air forces (with PA-200 Tornado aircraft) are assigned nuclear strike missions with the US nuclear weapons

60

year?

(Norris and Kristensen, 2011). At its 2012 summit meeting in Chicago, the NATO alliance is expected to approve an updated military posture that incorporates the findings of the Defense and Deterrence Posture Review initiated at the 2010 Lisbon summit.

Some of the countries that host US nuclear weapons in Europe participate in the Joint Strike Fighter (JSF) program; the United States has committed to equipping the new F-35 JSF with a nuclear capability: the B61-12, which is under development. The B61-12 consolidates four existing B61 types into one and will be outfitted with a new tail kit assembly for increased accuracy. The B61-12 will be deliverable by B-2 and B-52H bombers, as well as F-15E, F-16, and PA-200 Tornado fighter-bombers, and of course the F-35.⁶

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Article Notes

1 For a copy of the full US aggregate data—as of September 2011—see Kristensen (2011c).

2 To read the appeal, see Kristensen (2011a).

3 Although the New START aggregate data lists the remaining B-52Gs as present at Minot AFB, they are in fact stored at the Aerospace Maintenance and Regeneration Center at Davis-Monthan AFB in Arizona. In accordance with New START accounting requirements, they are assigned to Minot and as visiting Davis-Monthan.

4 For a description of the nuclear-targeting review and the war plan, see Kristensen and Norris (2011, 12–19).

5 For a review of the Fiscal Year 2012 Stockpile Stewardship and Management Plan, see Roth et al. (2011).

6 For a review of the B61-12 bomb and its implications, see Kristensen (2011b).

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